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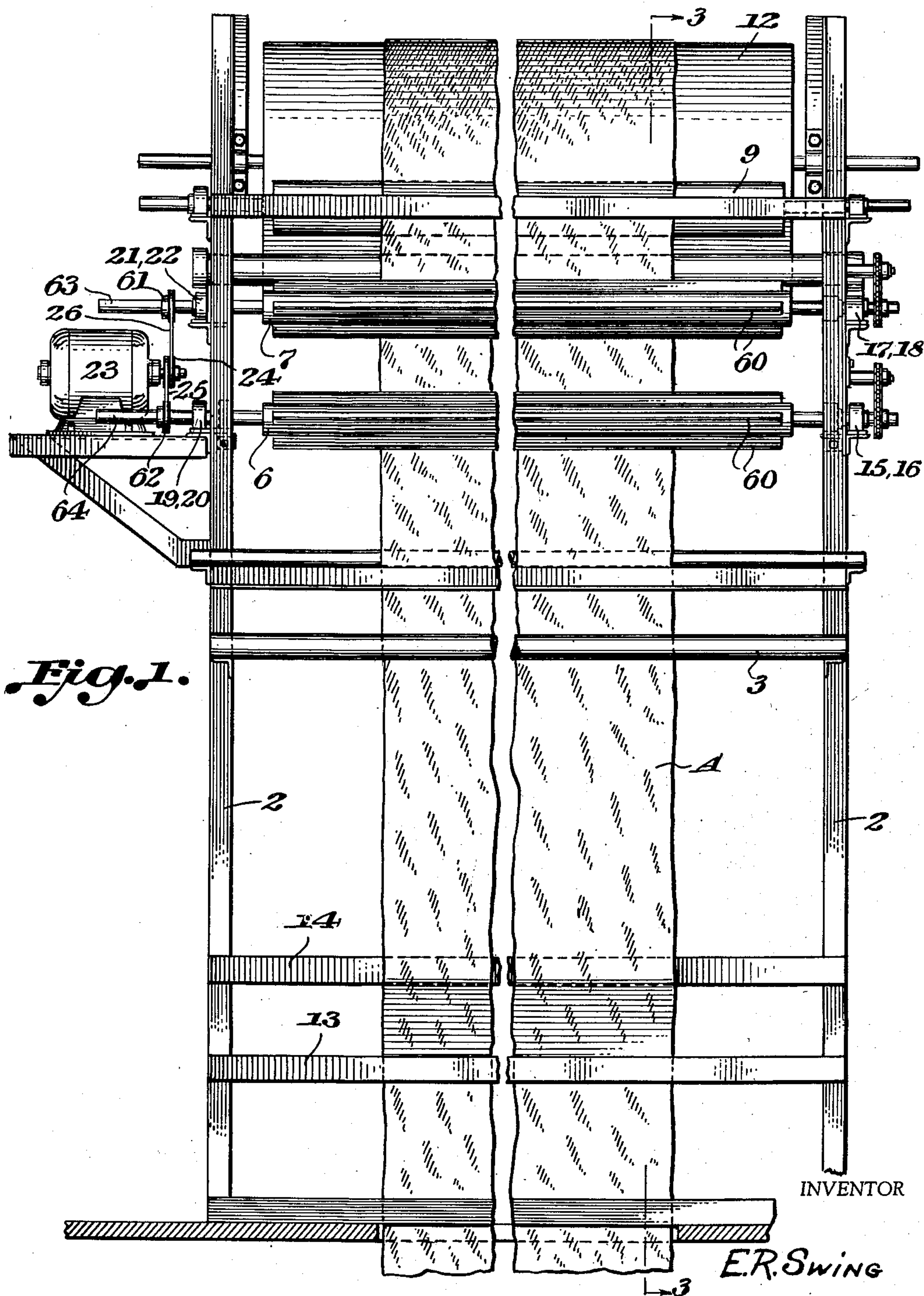
E. R. SWING

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TERRY FABRIC FINISHING MACHINE

Filed Nov. 29, 1950

4 Sheets-Sheet 1



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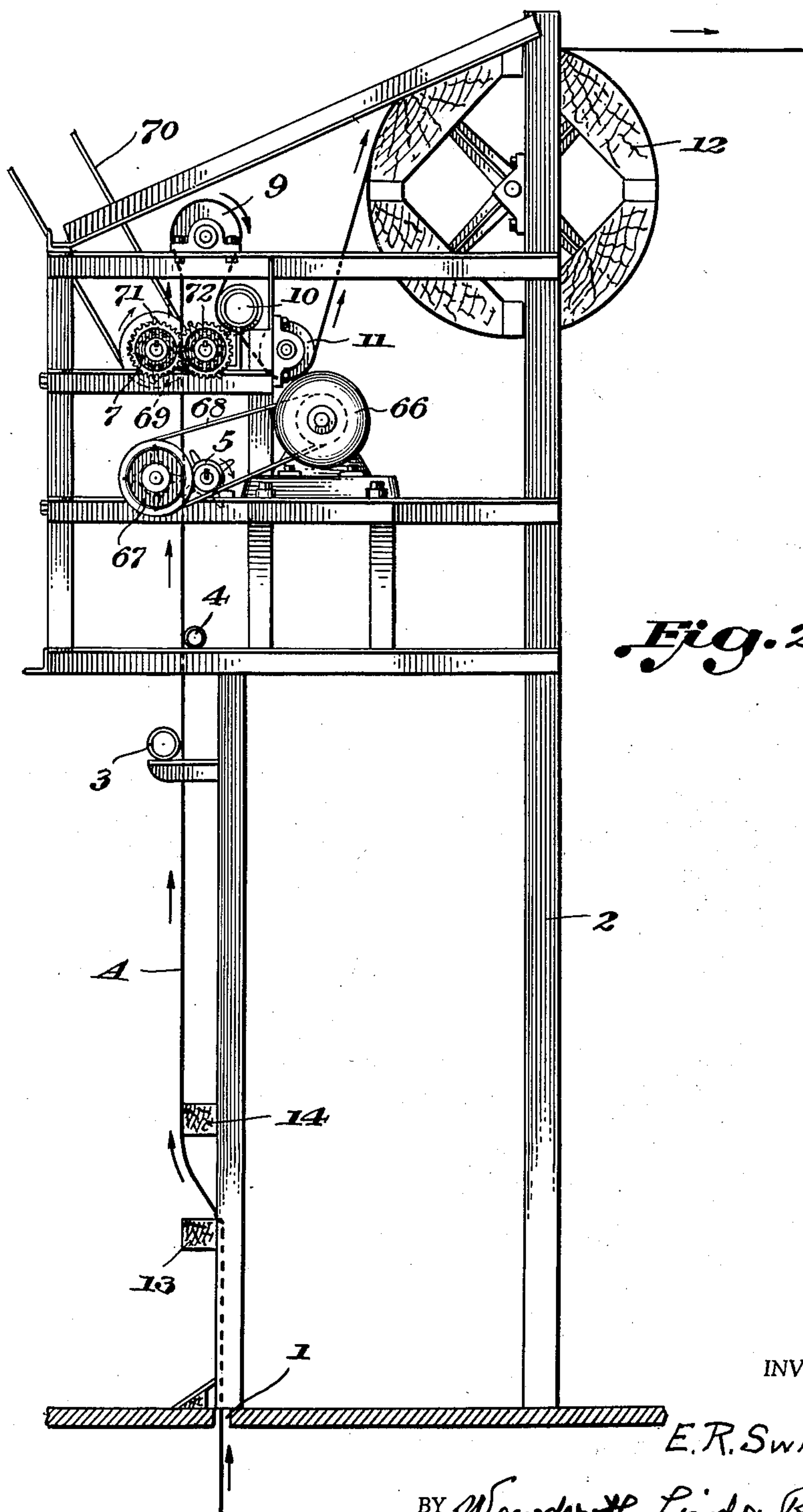
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*Fig. 2.*

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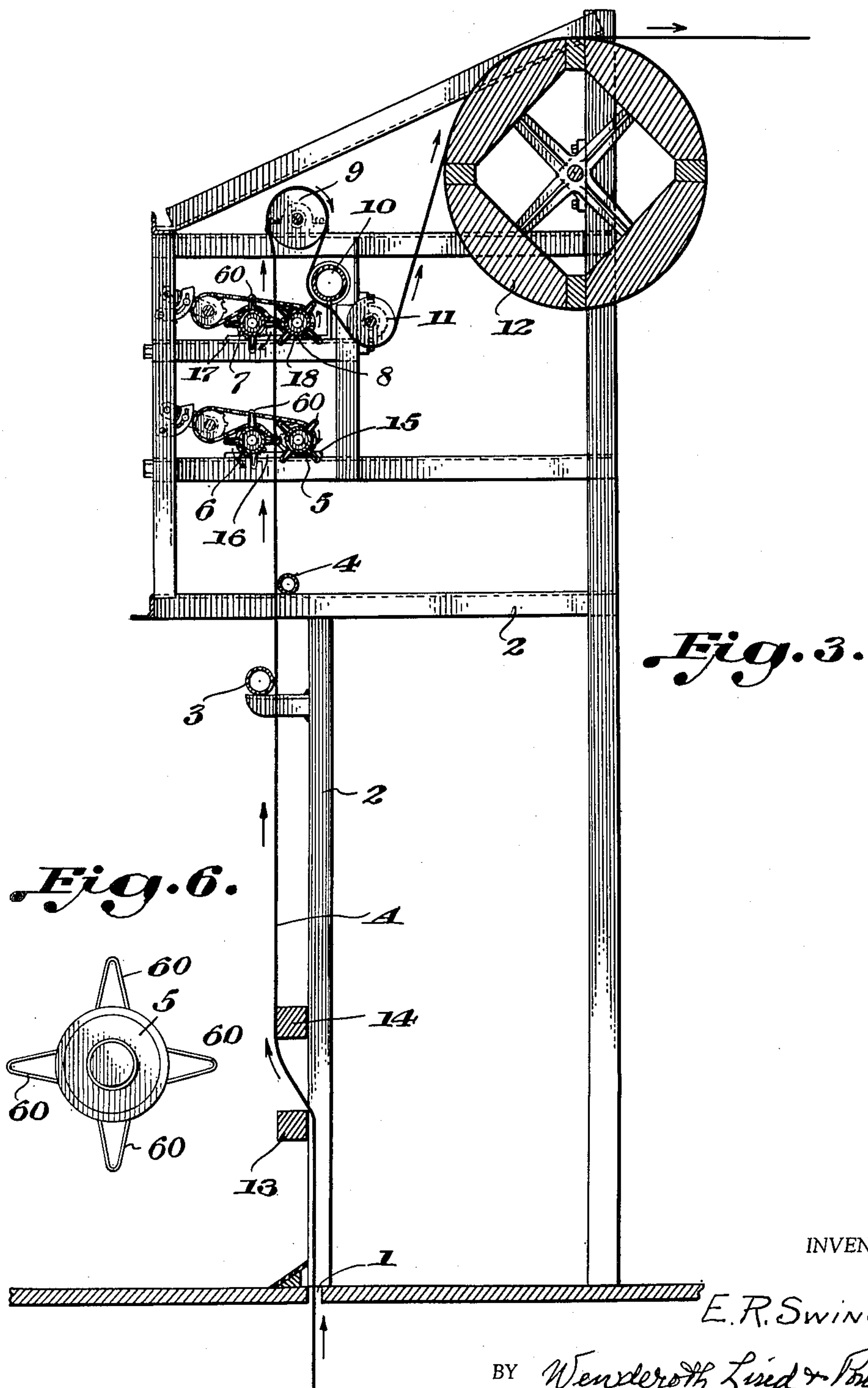
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*Fig. 3.*

*Fig. 6.*

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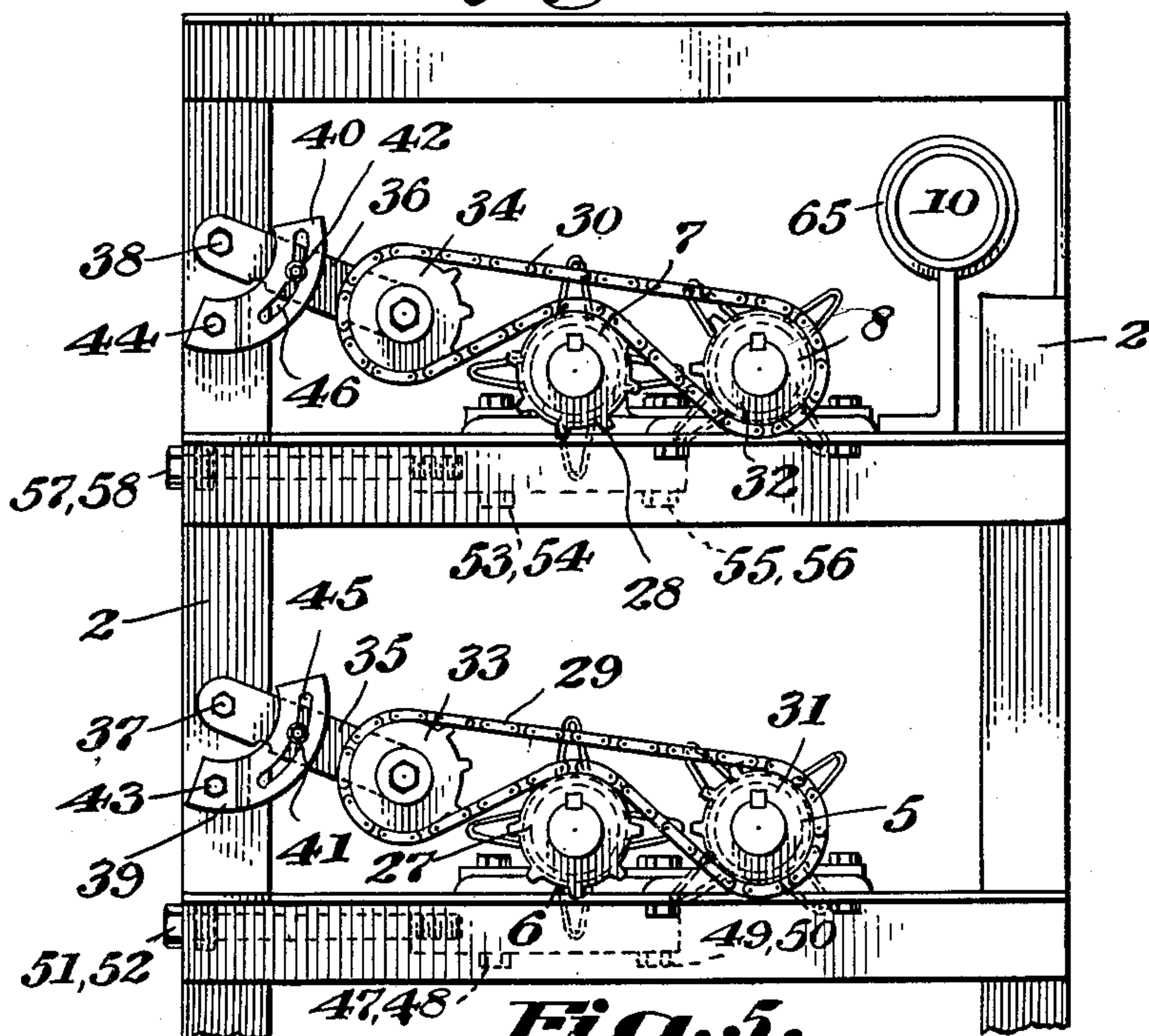
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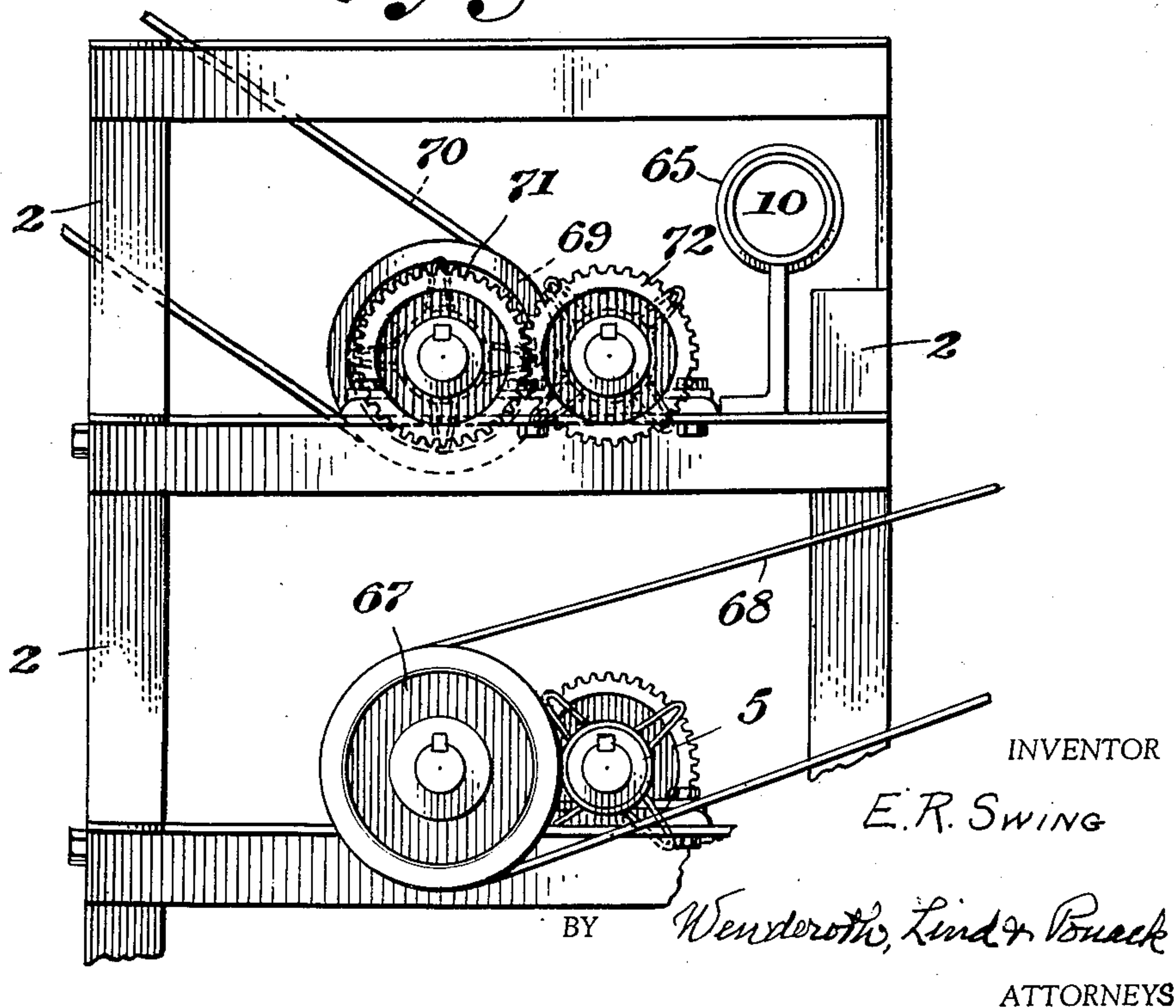
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*Fig. 4.*



*Fig. 5.*





## UNITED STATES PATENT OFFICE

2,629,918

## TERRY FABRIC FINISHING MACHINE

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7 Claims. (Cl. 26—2)

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The present invention relates to an improvement in textile finishing machines.

An object of the invention is to provide a construction which will restore textile fabrics such as terry towels and jacquard fabrics with raised or embossed design to their natural and desirable state.

In the bleaching process of terry towels through continuous units, the terry is left flat and leans all in one direction. It is an object of the invention to provide vibrators for such terry towels which will result in giving the towel a desirable finish which makes it more attractive and effective.

Also during the manufacture of terry products, while running them over rolls, storing them while wet and waiting to go to the driers the terry is ordinarily mashed hard and flat to the woven base. It is a further object of the present invention to raise such mashed terry from its pressed and matted base into a fluffy terry towel which is softer and deeper textured than that heretofore obtained.

With the above and other objects in view which will become apparent from the detailed description below several forms of the invention are shown upon the attached drawings in which:

Fig. 1 is a front view with parts broken away of a finishing machine for use after bleaching of the fabric and during the drying thereof.

Fig. 2 is a side view of a slightly modified construction.

Fig. 3 is a cross-sectional view taken on section line 3—3 of Fig. 1 looking in the direction of the arrows.

Fig. 4 is an enlarged side view of the vibrator rolls.

Fig. 5 is a similar view illustrating a modified drive therefor as shown in Fig. 2, and

Fig. 6 is a side view of a single vibrator roll.

In the various views similar reference characters indicate like parts.

Referring to Figs. 1 and 3, one or more widths A of fabric arrive through the floor slot 1 from the bleaching room below and then pass upwardly in the direction of the arrows until they pass into the drier. During their progress they may also be dried and for this purpose heating tubes, not shown, may be located adjacent their path.

The frame of the machine is indicated at 2 and the widths or strands of fabric first pass upwardly and over the tension cleat 13 and then in front of the tension cleat 14. They then pass upwardly in back of the tension bar 3 and in front of the tension bar 4 until they pass between the vibrator finishing rolls 5 and 6. The fabrics then pass between the vibrating finishing rolls 7 and 8 to the tension roll 9 from which they pass under the spreader bar 10 to and under the tension roll 11 to the reel 12 from which they pass into the drier.

The vibrator rolls 5, 6, 7 and 8 are provided with smoothly rounded cleats 60 as shown more

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particularly in Fig. 6, which are fixed in any desired manner to the surface of the rollers and extend longitudinally of the entire length of the rolls. These cleats may be constructed of sheet metal as shown or from any other desired material.

As shown the vibrator rolls 5, 6, 7 and 8 are disposed in pairs which are horizontally parallel although the finishing machine may be disposed at right angles to the position shown and in such case the finishing rolls would be located in pairs which are vertically parallel.

The rolls 5 and 6 are rotated in such a direction that the surface contacting the fabric travels in the same direction as that of the fabric while the rolls 7 and 8 rotate in a direction so that the surface contacting the fabric travels in a direction opposite to that of the travel of the fabric and at a surface speed several times greater than that of the fabric. In this way the cleats 60 on the vibrator rolls give a vigorous fluffing action to the fabric thereby causing the pile thereof to stand up in its natural and desired position and imparts thereto an attractive finish.

The tension cleats 13 and 14 are secured to the frame 2 in any desired manner such as by bolting or the like and they act through the friction of the cloth on the cleats as a holding back device for the fabric. The tension bars 3 and 4 are supported by and secured to the frame 2 in any desired manner and they also act through the friction of the cloth on the bars in order to maintain the fabric taut as it passes between the vibrator rolls 5, 6 and 7, 8.

The vibrator rolls 5, 6, 7 and 8 are supported in pillow block bearings 15, 16, 17, 18, 19, 20, 21, and 22 which are bolted to the main frame 2. The rolls 6 and 7 are rotated from the electric motor 23 through a sheave 24, the belts 25 and 26 and the pulleys 61 and 62 fixed the shafts 63 and 64 of the rolls 7 and 6 respectively. The size of the pulleys is regulated so as to give the speeds desired in the vibrator rolls.

The rolls 5 and 8 are driven from the rolls 6 and 7 through a mechanism shown in detail in Fig. 4.

On the shaft of the roll 6 a sprocket 27 is keyed and on the shaft of roll 5 a sprocket 31 is keyed. A sprocket chain 29 extends around a tightening sprocket 33 and the sprocket 31 and over the sprocket 27 so as to transmit the drive from the roll 6 to the roll 5. The tightening sprocket 33 is mounted on ball bearings and secured to the arm 35 which is secured to the frame 2 by a bolt 37. A segment 39 is also secured to the frame 2 by a bolt 43 and is provided with an arcuate slot 45 in which a bolt 41 secured to the arm 35 travels. By loosening the bolts 37 and 41 the tightening sprocket 33 may be adjusted as desired and the belt 29 tightened.

A similar arrangement is used for driving the roll 8 from the roll 7 comprising sprocket 28 upon the shaft of the roll 7 and sprocket 32 upon the shaft of the roll 8. The tightening sprocket is



shown at 34 and the sprocket chain 30 traverses the sprockets 34, 28 and 32 in the same manner as described with reference to sprockets 33, 27, and 31. The tightening sprocket 34 is mounted similarly to the sprocket 33 upon an arm 35 which is secured to the frame 2 by a bolt 38. A segment 40 having a slot 46 is secured to the frame 2 by a bolt 44. A bolt 42 fixed to the arm 38 traverses the slot 46 in the segment 40. The belt 30 is tightened or loosened in the same manner as the belt 29.

In order to vary the spacing between the rolls 5 and 6 and the rolls 7 and 8 the following arrangement is used: The rolls 5 and 8 are preferably rigidly secured to the frame 2 while the rolls 6 and 7 are made adjustable. The bearings for the roll 6 are secured to the frame 2 by bolts 47, 48 and 49, 50. These bolts extend through slots provided in the frame of the machine and upon turning the adjusting screws 51, 52, the bearings for the roll 6 may be moved towards or away from the roll 5.

A similar construction is used for adjusting the roll 7 towards or away from the roll 8 and comprises the bolts 53, 54 and 55, 56 and the adjusting screws 57, 58. The support for the spreader bearing 10 is shown at 65. By the construction disclosed above the rolls 6 and 7 may be moved towards or away from the rolls 5 and 8 so that the action of the vibrator rolls upon the fabric may be varied as desired.

In Figs. 2 and 5 a slightly modified construction is shown with respect to the drive of the vibrator rolls 5, 6, 7 and 8. In this construction the motor 66 drives a pulley 67 secured to the shaft of the roll 6 by means of the belt 68. The other end is provided with a gear which meshes with a gear provided at the same end of the roll 5 thereby driving rolls 5 and 6 in synchronism. The roll 7 is driven by a pulley 69 fixed to the shaft thereof at the end opposite that at which the pulley 67 is located from a power belt 70 driven from any suitable source of power.

The shafts of the rollers 7 and 8 at the opposite end have keyed thereto the gears 71 and 72 which mesh and in this way the roll 8 is driven from the roll 7. In the construction shown in Figs. 2 and 5 the adjustment between the rolls 5 and 6 and 7 and 8 is relatively fixed.

It is thought that the invention and its advantages will be understood from the foregoing description and it is apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing its material advantages, the forms hereinbefore described and illustrated in the drawings being merely preferred embodiments thereof.

I claim:

1. A finishing machine for terry fabrics and the like comprising a frame, fabric tensioning means mounted on said frame, two pairs of vibrator rolls on said frame and means for rotating the rolls of one of said pairs in opposite direction than the direction of the other of said pairs and the rolls in each pair opposite to one another and the rolls of one of said pairs at a different speed from that of the rolls of the other of said pairs.

2. A finishing machine for terry fabrics and the like comprising a frame, fabric tensioning means mounted on said frame, two pairs of vibrator rolls on said frame and means for rotating the rolls of one of said pairs in opposite direction from the rolls of the other said pair and at

a different peripheral speed from that of the fabric passing through said machine.

3. A finishing machine for terry fabrics and the like comprising a frame, fabric tensioning means mounted on said frame, two pairs of vibrator rolls on said frame, longitudinally extending spaced cleats on said rolls and means for rotating the rolls of each said pair in opposite directions with respect to one another and one roll of one pair in the same direction as one roll of the other pair.

4. A finishing machine for terry fabrics and the like comprising a frame, fabric tensioning means mounted on said frame, two pairs of vibrator rolls on said frame, longitudinally extending spaced cleats on said rolls, means for rotating the rolls of each said pair in opposite direction with respect to one another and one roll of one pair in the same direction as one roll of the other pair and one pair at a different speed and means for varying the spacing between said rolls.

5. A finishing machine for terry fabrics and the like comprising a frame, fabric tensioning means mounted on said frame, two pairs of vibrator rolls on said frame, longitudinally extending spaced cleats on said rolls, said cleats being of bent sheet iron secured to said rolls and means for rotating the rolls of each said pair in opposite directions with respect to one another and one roll of one pair in the same direction as one roll of the other pair and at a different peripheral speed than that of the fabric passing through the machine.

6. A method of finishing terry towelling and the like while travelling between the bleaching room and the dryer comprising tensioning said towelling, then subjecting said towelling to a beating action by rotating rolls, said rolls at the point of contact with said towelling travelling in the same direction as said towelling and then subjecting said towelling to a beating action by rotating rolls, said last rolls at the point of contact with said towelling travelling in a direction opposite to the direction of travel of said towelling.

7. A method of finishing terry towelling and the like while travelling between the bleaching room and the dryer comprising tensioning said towelling, then subjecting said towelling to a beating action by rotating rolls, said rolls at the point of contact with said towelling travelling in the same direction as said towelling and then subjecting said towelling to a beating action by rotating rolls, said last rolls at the point of contact with said towelling travelling in a direction opposite to the direction of travel of said towel, said last named beating action being imparted by rolls having a surface speed at least two times greater than the surface speed of said first named rolls.

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